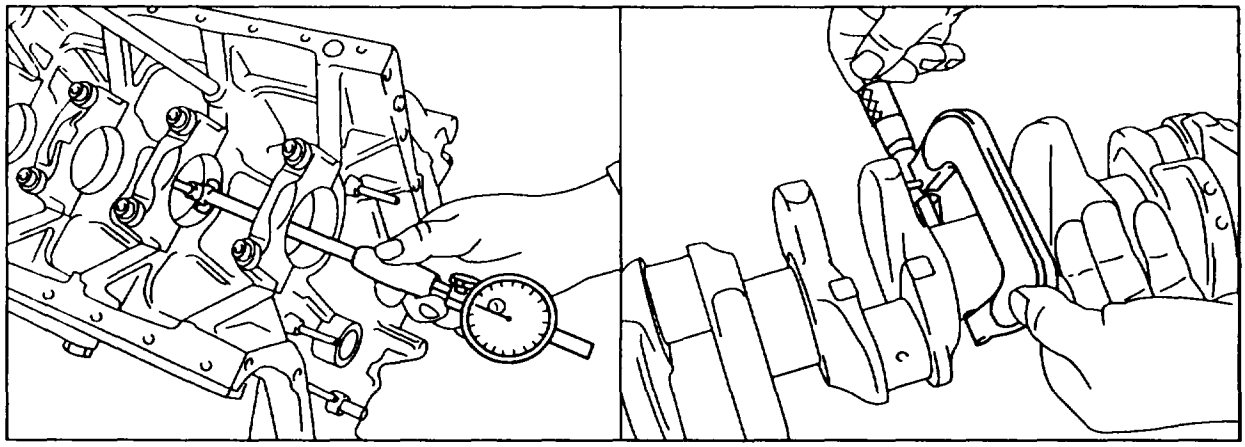
03–3200 Mounting crankshaft in bearings

Preceding work:
Crankshaft removed
Engine disassembled, cleaned
Crankshaft checked, cleaned

Operation no. of operation texts and work units or standard texts and flat rates

Mounting crankshaft radially



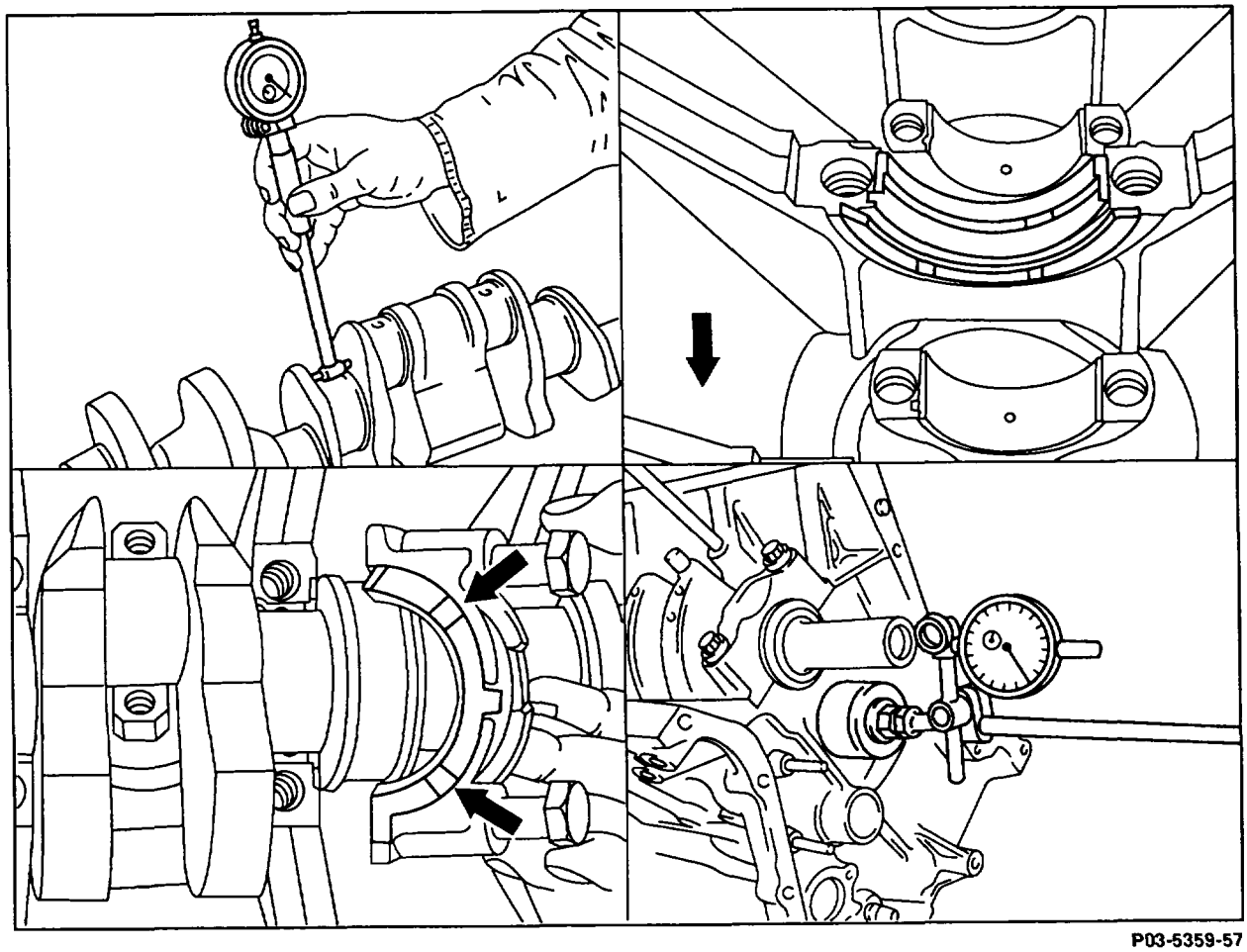
P03-5358-53

Crankshaft bearing caps	install, tighten (30 Nm)
Bearing bore Ø	measure, note
Crankshaft bearing journal Ø	measure, note
Bearing shells	match, see table
	⚠ Always match thick bearing shell in the bearing cap.
Likely radial bearing play	calculate
Bolt holes	clean by blowing out
Bearing shells	insert into crankcase and bearing caps
Bearing cap bolts	tighten (30 Nm)
Bearing Ø	measure
Bearing play (specification 0.035 – 0.045 mm)	calculate
Bearing caps	remove
Bearing shells in crankcase	oil
Crankshaft at bearing points	oil
Bearing caps with bearing shells	oil, install
Thread and contact surface of bolts	oil, install bolts

Bolts	tighten to torque and tightening angle (55 Nm + 90° tightening angle)

⚠
Rotate the crankshaft while tightening the bolts to enable any sticking to be determined in time.

Mounting crankshaft axially



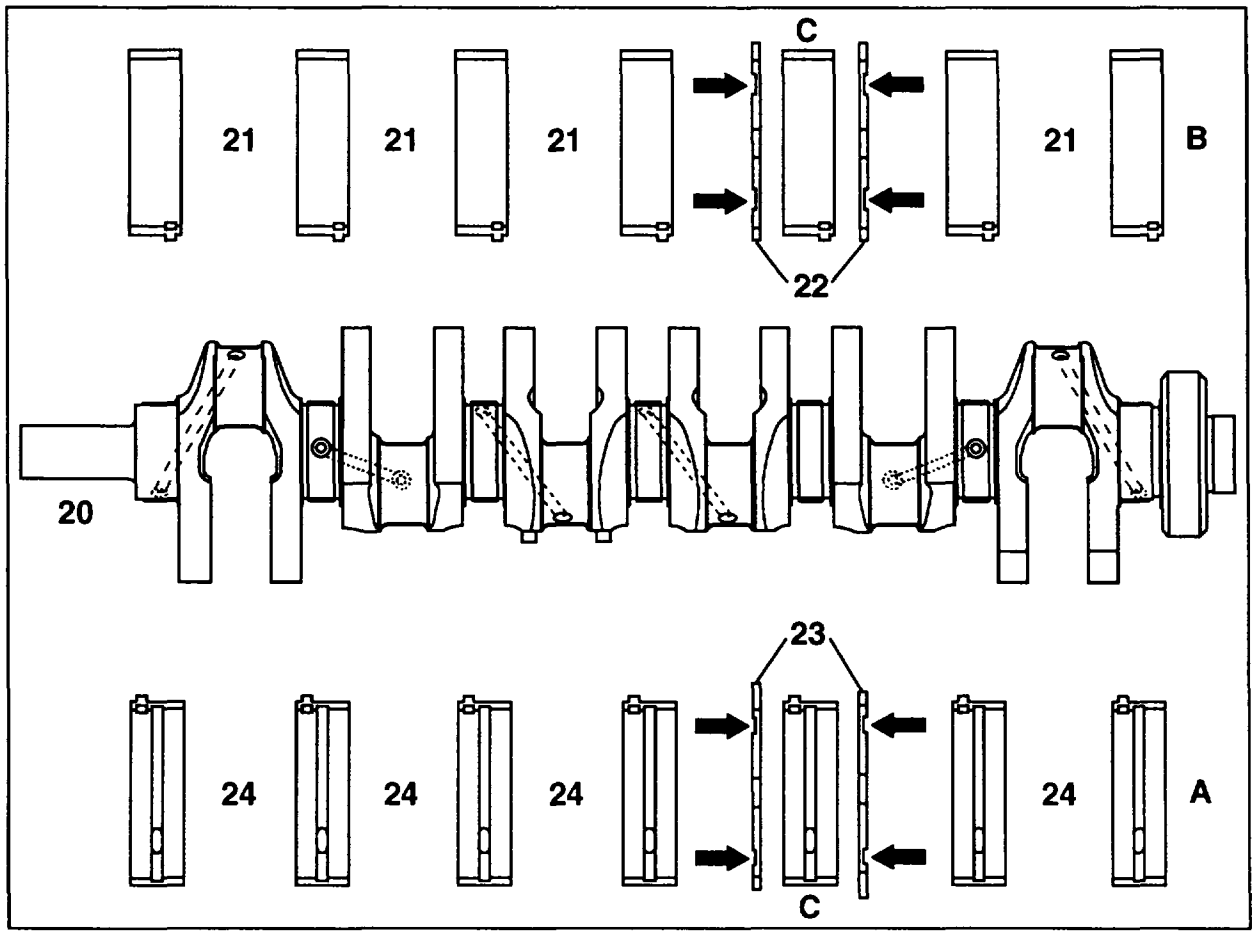
P03-5359-57

Fit bearing width at crankcase and at fit bearing cap	measure, note
Fit bearing width at crankshaft	measure, note
Thrust washers	match

⚠
Thrust washers of the same thickness must always be inserted on one side in the crankcase and in the bearing cap. The oil grooves must face toward the thrust face of the crankshaft and be oiled. The anti-twist lock is located at the thrust washer in the bearing cap.

Likely axial bearing play	calculate
Axial bearing play with crankshaft installed	measure (specification 0.100 – 0.200 mm)

Crankshaft bearing diagram



P03-5296-57

A Bearing shells in crankcase
B Bearing shells in bearing caps

Production allowances and identification of basic bores of crankcase

Bore Ø	Identification [1]	Size	Fit bearing width
62.500–62.506	1 punch mark	Standard	19.979–20.000
62.506–62.513	2 punch marks	Standard	19.979–20.000
62.513–62.519	3 punch marks	Standard	19.979–20.000

[1] The production tolerance stages are identified by punch marks in the contact surface of the oil sump, in each case next to the crankshaft bearing

Bearing shells for crankshaft bearings (replacement parts) [2]

Size	Bearing inner Ø	Color code	Part suppl. number	Bearing shell wall thickness [3] in crankcase	Bearing shell wall thickness [3] in bearing cap
Standard	58.00	blue	52	2.255–2.260	2.255–2.260
Standard	58.00	yellow	54	2.260–2.265	2.260–2.265
Standard	58.00	red	56	2.265–2.270	2.265–2.270
Standard 1	58.00	white	57	–	2.270–2.275
Standard 1	58.00	violet	58	–	2.275–2.280
Rep. 1	57.75	blue	52	2.375–2.380	2.375–2.380
Rep. 1	57.75	yellow	54	2.380–2.385	2.380–2.385
Rep. 2	57.50	blue	52	2.500–2.505	2.500–2.505
Rep. 2	57.50	yellow	54	2.505–2.510	2.505–2.510
Rep. 3	57.25	blue	52	2.625–2.630	2.625–2.630
Rep. 3	57.25	yellow	54	2.630–2.635	2.630–2.635
Rep. 4	57.00	blue	52	2.750–2.755	2.750–2.755
Rep. 4	57.00	yellow	54	2.755–2.760	2.755–2.760

[2] A parts set with the replacement part supplementary number 52, 54 and 56 consists in each case of a bearing shell for the crankcase and the bearing shell for the bearing cap.
Parts with the part supplementary number 57 and 58 are supplied individually and can be used only for the bearing cap (without oil groove).

[3] The thickness to be used is the thickest measured point in the middle of the bearing shell.

Crankshaft machining dimensions

Size [5]	Crankshaft bearing journal Ø	Color code [4]	Fit bearing width [6]
Standard	57.960–57.965	blue	24.500–24.533
Standard	57.955–57.960	yellow	24.500–24.533
Standard	57.950–57.955	red	24.500–24.533
Standard 1	57.945–57.950	white–blue	24.600–24.633
Standard 1	57.940–57.945	white–yellow	24.600–24.633
Standard 1	57.935–57.940	white–red	24.600–24.633
Rep. 1	57.705–57.715	–	24.700–24.733
Rep. 2	57.415–57.465	–	24.900–24.933
Rep. 3	57.205–57.215	–	25.000–25.033
Rep. 4	56.955–56.965	–	–

[4]) The tolerance classification of the crankshaft bearing journal Ø is factory-identified with color code next to bearing journals.

[5]) Crankshafts of standard size 1 are not supplied as replacement parts.

[6]) The thrust washers are supplied in the thicknesses 2.15, 2.20, 2.25, 2.35 and 2.40 mm as a parts set in each case with a thrust washer for the crankcase and a thrust washer for the bearing cap.

Test data

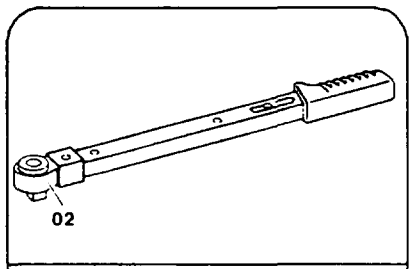
Crankshaft bearing play	radial	0.035 – 0.045
	axial	0.100 – 0.200
Conrod bearing play	radial	0.02 – 0.05

Tightening torques in Nm or tightening angle

Crankshaft bearing cap bolts [1]	Initial tightening torque	55
	Tightening angle	90°

[1]) Re-use bolts up to a bolt length of max. 63.8 mm

Special tools



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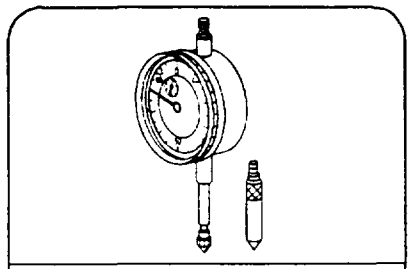

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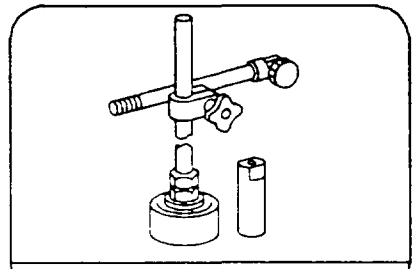

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Commercially available tools

Quick-calipers for internal measurements
Ø 20 – 40 mm
Ø 40 – 60 mm
Ø 60 – 80 mm
Micrometer
0 – 25 mm
50 – 75 mm